

CLAIMS

1. An electric filter comprising a plurality of thin film bulk acoustic resonators (FBARs) consisting of a thin layer of a piezoelectric material
5 sandwiched between two metal electrodes linked in a series/parallel connection arrangement for which the areas of the electrodes in contact with the piezoelectric layer to form the resonators are different between in series and in parallel FBARs.
- 10 2. An electric filter as described in claim 1, wherein the thickness of the piezoelectric material is different between the in series and in parallel FBARs.
3. An electric filter as described in claim 1 or claim 2, wherein the
15 areas of the electrodes for the FBARs linked in series are adjusted so that their series resonance frequency is the same as the parallel resonance frequency of the FBARs linked in parallel.
4. An electric filter as described in any preceding claim, wherein the
20 piezoelectric material is zinc oxide.
5. An electric filter as described in any of claims 1 to 3, wherein the piezoelectric material is substantially comprised of lead titanate zirconate.
- 25 6. An electric filter as described in any of claims 1 to 3, wherein the piezoelectric material is aluminum nitride.
7. An electric filter as described in any of claims 1 to 3, wherein the
piezoelectric material is substantially comprised of lead scandium
30 tantalum oxide.

8. An electric filter as described in any of claims 1 to 3, wherein the piezoelectric material is substantially comprised of bismuth sodium titanium oxide.
- 5 9. An electric filter as described in any preceding claim, wherein the metal electrodes comprise gold.
- 10 10. An electric filter as described in any of claims 1 to 8, wherein the metal electrodes comprise aluminum.
- 11 11. An electric filter as described in any of claims 1 to 8, wherein the metal electrodes comprise platinum.
- 12 12. An electric filter as described in any preceding claim, wherein 2
15 FBARs are linked in series and 2 FBARs are linked in parallel.
- 13 13. An electric filter as described in any one of claims 1 to 11, whereon 3 FBARs are linked in series and 3 FBARs are linked in parallel.
- 20 14. An electric filter according to any preceding claim, wherein the piezoelectric material of FBARs in parallel is thicker than that of FBARs in series.
- 25 15. An electric filter according to any preceding claim, wherein the area of electrodes of FBARs in parallel is greater than that of FBARs in series.
- 30 16. An electric filter comprising at least one FBAR in series and at least one FBAR in parallel, each FBAR comprising a layer of piezoelectric material sandwiched between two electrodes of which the

areas of the electrodes in contact with the piezoelectric layer are different between the FBAR in series and the FBAR in parallel.

17. An electric filter substantially as hereinbefore described with
5 reference to the accompanying drawings.

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